602980

2 of 3

Technical Research Note 146

# JOB PERFORMANCE OF EM SCORING LOW ON AFQT

57-p
HC $ 3.00
MF $ 0.50

DDC
JUL 1 1964
DDC IRA E

U. S. ARMY PERSONNEL RESEARCH OFFICE

# U. S. ARMY PERSONNEL RESEARCH OFFICE

## An activity of the Chief, Research and Development

Charles S. Gersoni
Colonel, GS
Commanding

J. E. Uhlaner
Director, Research Laboratories

Hubert E. Brogden
Chief Scientist

Initial distribution of this report has been made by the U. S. Army Personnel Research Office. Additional copies may be obtained as follows. Department of Defense agencies and their contractors should address requests for additional copies to: Director, Defense Documentation Center, ATTN: TIOG, Bldg. No. 5, Cameron Station, Alexandria, Virginia, 22314. Other agencies and persons may obtain information on cost of microfilm or photostatic copies from: Office of Technical Services, Department of Commerce, Washington, D. C. 20230, ATTN: Technical Reports Section. Copies may also be obtained on loan from local depository libraries. A list of these libraries may be obtained from: Documents Expediting Project, Library of Congress, Washington, D. C. 20540. The mailing address of USAPRO is: U. S. Army Personnel Research Office, Washington, D. C. 20315.

**Technical Research Note 146**

# JOB PERFORMANCE OF EM SCORING LOW ON AFQT

William H. Helme and Alan A. Anderson

Submitted by Edmund F. Fuchs
Chief, Military Selection Research Laboratory

Approved by

J. E. Uhlaner
Director, Research Laboratories

Hubert E. Brogden
Chief Scientist

Charles S. Gerson
Colonel, GS
Commanding

Army Project Number
2J024701A722

New Classification Tech d-13

May 1964

USAPRO Technical Research Reports and Technical Research Notes are intended for sponsors of R&D tasks and other research and military agencies. Any findings ready for implementation at the time of publication are presented in the latter part of the Brief. Upon completion of a major phase of the task, formal recommendations for official action normally are conveyed to appropriate military agencies by briefing or Disposition Form.

# PREFACE

The NEW CLASSIFICATION TECHNIQUES Task applies psychological measurement techniques in a continuing series of studies to attain increasingly accurate and differentiated measures of individual potential so that the Army can make optimum use of the skills and aptitudes of its enlisted personnel. Timeliness and effectiveness of the aptitude area measures used in enlisted classification are maintained by introducing new tests and updated forms of existing tests into the Army Classification Battery. Major revisions of the aptitude area system are based on validity studies of operational and experimental tests on a wide variety of military occupational specialties and integration of results in relation to the Army's job structure. Several closely related research activities are currently pursued with the following objectives: (1) validation and standardization of newly developed ACB tests; (2) development of aptitude and interest measures to predict motivation in training and on the job; and (3) identification of personnel and situational factors leading to change in career intention.

One objective of the NEW CLASSIFICATION TECHNIQUES Task is to determine the extent to which men of lower than average ability can perform usefully in the Army. The present publication reports on a portion of completed subtask d, "Evaluation of Category IV enlisted men," FY 1964 Work Program.

The entire research task is responsive to special requirements of the Deputy Chief of Staff for Personnel and the U. S. Continental Army Command, as well as to requirements to contribute to achievement of the objectives of DA R&D Project 2J024701A722.

JOB PERFORMANCE OF EN SCORING LOW ON AFQT

# BRIEF

Requirement:

To assess the usefulness to the Army of men of low average or low general ability.

Procedure:

Enlistees in the AFQT 21-30 percentile range accepted by the Army in 1958, when the qualifying score was temporarily lowered, were followed up 12 to 18 months after entry to obtain job performance ratings and military discipline records. Ratings and test data were also obtained on co-workers on these men. Scores on operational and experimental measures were analyzed for effectiveness in predicting job performance differentially in MOS groups.

Findings:

Army jobs in which these below-average men were found are generally low skill level MOS. Findings with respect to level of performance are applicable only within such MOS.

Of RA Category IV men in combat MOS, 50% were rated as performing acceptably, 43% as meeting the higher standards of Army career performance. Corresponding percentages in technical MOS were 45% and 40%. Successful performance depended to some extent on a man's having his higher skills in the aptitude area of the MOS to which he was assigned.

In this highly restricted group, there is no clear positive evidence that more refined screening on age, education, and cognitive ACB tests would result in appreciable gain in differential prediction of job performance or in prediction of military adjustment.

The adjustment scale of an experimental Self-Description Inventory held some promise of contributing to differential assignment of RA Category IV men to combat versus technical jobs.

Utilization of findings:

Substantial numbers of Category IV enlisted men can be used to advantage by the Army, provided: (1) they have special abilities of a higher level useful for particular Army jobs, and (2) Army requirements in MOS with short (8-week) advanced individual training programs are sufficient to employ them. The second condition is usually met under limited mobilization such as the Berlin buildup of 1961. Since a portion of the personnel spaces in these MOS suitable for Category IV men need to be used for men who progress rapidly to advanced level MOS, the potential utilization of below-average men is less than the number of spaces in these MOS. In the normal peacetime input of the last decade, replacement requirements have not been great enough to make acceptance of Category IV enlistees desirable.

# CONTENTS


| | Page |
|---|---|
| BACKGROUND OF THE PROBLEM | 1 |
| OBJECTIVES OF THE PRESENT STUDY | 1 |
| METHOD | 2 |
| Sampling | 2 |
| Criteria of Performance | 3 |
| Variables | 3 |
| Statistical Analysis | 5 |
| Validity Analysis of Experimental Noncognitive Measures | 5 |
| RESULTS | 7 |
| Job Performance of Lower Mental Category Men | 7 |
| COMPARISON OF ASSIGNED RA CATEGORY IV MEN WITH EARLY DISCHARGE MEN | 10 |
| Prediction of Job Performance Criterion | 10 |
| Prediction of Military Adjustment Criterion | 14 |
| IMPLICATIONS OF RESULTS | 18 |
| REFERENCES | 21 |
| APPENDIX | 23 |

## TABLES


| | | Page |
|---|---|---|
| Table 1. | Samples employed in follow-up of Category IV EM | 6 |
| 2. | Percent of lower mental category EM meeting standards for acceptable and career level in job performance rating | 8 |
| 3. | Mean scores on aptitude area selector for lower mental category samples | 9 |
| 4. | Mean scores on selector variables for RA Category IV early dischargees compared with combat and technical samples | 11 |
| 5. | Mean scores on selector variables for RA Category IV combat samples | 12 |
| 6. | Mean scores on selector variables for RA Category IV technical samples | 13 |
| 7. | Validity coefficients for age, education, and ACB tests for prediction of job performance ratings | 15 |
| 8. | Validity of scales on noncognitive measures for prediction of job performance ratings | 16 |
| 9. | Validity of age, education, and ACB tests for prediction of military adjustment record | 17 |
| 10. | Validity of scales on noncognitive measures for prediction of military adjustment record | 19 |


## FIGURE


Figure 1. Predictor variables employed in follow-up of Category IV EM

# JOB PERFORMANCE OF EM SCORING LOW ON AFQT

## BACKGROUND OF THE PROBLEM

Rapid progress in military technology has resulted in expanding requirements for quality in military manpower. The Army needs increasing numbers of men who can readily be trained to operate and maintain complex equipment and to serve in demanding administrative functions. Men with capacity to develop the special leadership, judgment, and technical skills required in modern combat are also needed. High standards of man-for-man effectiveness must be met if the Army is to carry out its worldwide mission with a relatively modest total strength.

At the same time, social pressures to admit men who score below average on the broad general ability test used for all services--the Armed Forces Qualification Test (AFQT)--have continued. First among these pressures is the competition for manpower quality by the civilian economy, where similar demands have arisen from technological advance. Army recruitment and reenlistment programs compete with industry which can offer higher pay and freedom to change employment at any time. Partially for this reason, Army applicants have tended to come disproportionately from educationally and culturally less advantaged groups. Yet the Army cannot suffer a low quality of individual performance. Thus the problem is how the Army can utilize some men of lower ability as indicated by AFQT scores, how many men, in what jobs, and under what special provisions of supplementary screening so that their performance meets the standards that the Army's mission requires.

## OBJECTIVES OF THE PRESENT STUDY

The present study analyzed results of the Army's experience with a sample of enlistees accepted under a special program from August to December 1958. For this period the mental screening standard of the 31st percentile on AFQT for initial enlistment was lowered to the 21st percentile, with a supplementary requirement of at least two aptitude area standard scores of 90 or higher. This level is approximately equal to the 31st percentile, and is the same supplementary requirement in force for acceptance of inductees who score in Category IV--10th through 30th percentile on AFQT.

Findings from the study depend on the particular way in which these men were classified, trained, and assigned to duty, because the study was undertaken only after full personnel processing had been accomplished. Within this framework, the study investigated the following specific questions:

1. What proportion of the specially selected Category IV enlistees performed acceptably in each MOS?

2. What proportion performed at the level considered adequate for career EM, men who can advance in skill and grade in later terms of service?

3. How well did lower Category III enlistees and Category IV and lower Category III inductees measure up to the same standards of acceptable and career performance?

4. To what extent did scores on ACB tests, age, and civilian education contribute to effective supplementary screening and classification?

5. How promising did noncognitive measures appear as supplementary screening and classification devices?

## METHOD

### Sampling

About 1000 enlistees accepted under the special Category IV program were identified and located. Arrangements were made to obtain predictor and criterion data on these men, together with data on their co-workers--men in the same MOS and under the same supervisors. Both RA and US men of all mental category levels were represented. Data collection began in November 1959, one year after the Category IV enlistees came into the Army, and continued until June 1960. Visits were made to installations in the continental United States and to Germany. A small additional number of cases was obtained by mail.

Of the approximately 1000 Category IV men identified for follow-up, 137 were found to have been discharged prior to completion of 12 to 18 months' service. These cases were used in a separate acceptability analysis. Of the remainder, 667 were in sufficiently populous MOS groups for analysis. Performance ratings were obtained on these men and on all their co-workers. Background data and scores on Army Classification Battery (ACB) tests administered during initial classification were obtained from Army personnel records. To all men at installations visited, experimental self-description tests were administered, as well as the Classification Inventory and the General Information Test which had been added to the ACB after many of these men entered the Army.

Three main samples based on AFQT level and service category were constituted:

1. RA, Category IV (21st - 30th percentile on AFQT), two or more aptitude area scores of 90 or higher (N = 667).

2. RA, lower Category III (31st - 50th percentile on AFQT) (N = 353).

3. US, Category IV (10th - 30th percentile on AFQT), two or more aptitude area scores of 90 or higher; and US, lower Category III (31st - 50th percentile on AFQT) (N = 312).

The RA Category IV cases were further divided into two samples for analysis of noncognitive measures based on the Classification Inventory and the Self-Description Inventory. Ten scales--five in the Classification Inventory and five in the Self-Description Inventory--were developed empirically in one subsample. Cases on which scales were developed were not used in the validity analysis of the noncognitive measures.

### Criteria of Performance

The principal criterion was a job performance rating. For each follow-up case and for each additional "co-worker" case, three or four ratings by immediate or very close supervisors were obtained. The Combat Aptitude Rating Scale used with men in combat MOS required a rank-ordering of all ratees in the squad, followed by assignment of numerical ratings from a high of 7 to a low of 1. The Army Enlisted On-the-Job Data Sheet, for non-combat MOS, required each rater to assign values from a high of 10 to a low of 0 on each of three questions pertaining to job knowledge, job performance, and promotability. Each rater's average across the three questions was in turn averaged, the immediate supervisor's rating receiving weight equal to the average of all other raters combined. Every precaution was taken to assure that the raters were not aware of the purpose of the study and that they had no knowledge of the individual's AFQT category.

On the basis that the Army had found acceptable those men scoring at the 31st percentile on AFQT, the "acceptable" level of performance was set at the rating score predicted by the 31st percentile. By similar reasoning, given the somewhat stricter reenlistment standards and the need of the Army for higher career standards, the military job performance predicted by the 50th percentile was set as the career level requirement.

A second criterion was obtained in the form of a military adjustment record. This consisted of a tabulation of disciplinary offenses, including courts-martial and days lost for punishment. The criterion score was dichotomized into no adverse disciplinary record versus recorded disciplinary offenses of all types.

The AFQT was used only as a population control variable in this study.

### Variables

Background and selector variables employed in the study included age, years of civilian education completed, number of aptitude area scores of 90 or higher, and scores on nine ACB tests administered on entry into service. In addition, three noncognitive tests were administered at the time job performance ratings were obtained. The Classification Inventory and the General Information Test, both subsequently incorporated into the ACB, yielded total scores. The Classification Inventory and the experimental Self-Description Inventory were each item-analyzed to yield five empirical scales. Further, the General Information Test was scored for four content scales and the Self-Description Inventory for seven. The 35 predictor variables are listed in Figure 1, together with the reference code used in later presentation of results.

**Background Variables**

Age
Years of Civilian Education Completed (Educ)

**Army Classification Battery (ACB)**

Verbal (VE)
Arithmetic Reasoning (AR)
Pattern Analysis (PA)
Mechanical Aptitude (MA)
Army Clerical Speed (ACS)
Army Radio Code (ARC)
Shop Mechanics (SM)
Automotive Information (AI)
Electronics Information (ELI)
Number of Aptitude Area Scores 90 or above (AA 90+)

**ACB Tests given After 1 to 1 1/2 Years Service**

Classification Inventory (CI)
General Information Test (GIT)

**Experimental Noncognitive Test Scales**

CI: Empirical Combat Performance (C-1)
Empirical Combat Performance (C-2)
Empirical Technical Performance (Tech)
Empirical Combat Adjustment (A-1)
Empirical Technical Adjustment (A-2)

GIT: Content Scales

Knowledge of Military (Mil)
Knowledge of Firearms, Hunting, Fishing (Guns)
Knowledge of Tools, Mechanical Process (Tools)
Knowledge of Team Sports (Sports)

**Self-Description Inventory EC-4R (PT 3922)**

Empirical Combat Performance (C-1)
Empirical Combat Performance (C-2)
Empirical Technical Performance (Tech)
Empirical Combat Adjustment (A-1)
Empirical Technical Adjustment (A-2)
Annoyance (Annoy) Content Scales
Mechanical Experience (Mech Exp)
General Adjustment (Gen Adj)
Family Relations (Fam Rel)
Rural-Urban (Rur-Urb)
Socio-Economic (Soc-Ec)
Job Adaptability (Job Adapt)

Figure 1. Predictor variables employed in follow-up of Category IV EM

### Statistical Analysis

Within each sample, subsamples were constituted based on MOS or groups of closely related MOS (Table 1). Distributions of criterion ratings were prepared for each MOS subsample, and the proportion of RA men in each of the three qualification categories--RA 21-30, RA 31-50, and US 10-50--attaining ratings of "acceptable" and "career level" performance were computed. Computations were based on actual counts, with rating frequencies grouped in seven intervals on the combat job criterion and eight on the technical job criterion. Interpolation was made within each interval, a procedure equivalent to smoothing the distributions within intervals.

For analysis of the selection factors operating in the assignment of Category IV men, means and standard deviations of background variables and scores on Army Classification Battery tests given prior to initial classification were computed for all MOS subsamples. Comparisons were both by MOS and by qualification category, as well as by combat versus technical MOS. The only data available on the RA Category IV men discharged prior to follow-up were scores on selector variables: age, education, AFQT, and ACB tests. Means and standard deviations for these men were compared with those for the combat and technical MOS samples.

Finally, the validity of both operational and experimental measures in predicting the performance ratings was estimated. For the background and ACB selector variables, validity coefficients of each predictor against the criterion rating were computed in each MOS subsample within AFQT qualification category. Each set of coefficients of a given variable for all combat samples was tested for homogeneity by the $X^2$ test of Z-coefficients (Edwards, 1950, p. 135), and similarly for all technical samples. These tests were first run two-dimensionally, yielding $X^2$ for variance due to MOS, to category, and to interaction of MOS and category, using slightly modified cell frequencies to achieve proportionality. In the technical samples, only the two RA categories were compared by MOS. One-way tests were then run to include all the omitted samples, and to check on the significant $X^2$ found in the two-way analyses based on modified cell frequencies. When only five of the $X^2$ tests on background and ACB variables proved significant the null hypothesis could not be rejected. Validity coefficients for the tests were averaged across all combat and all technical jobs within category, then across all MOS and categories.

Validity analysis of background and ACB variables for the military adjustment criterion followed procedures described for the job performance criterion in the RA Category IV sample.

### Validity Analysis of Experimental Noncognitive Measures

The experimental scales of the three noncognitive measures given at the same time the job performance ratings were obtained--12 to 18 months after entry on active duty--were of two kinds: (1) empirical scales based on item analysis against the job performance rating or the military adjustment record criterion, and (2) a priori content scales. The same method of validity analysis was employed on these variables as on the ACB test scores, except that the RA Category IV sample used for selection of items for the empirical scales was not used in the validity analysis.

Table 1

SAMPLES EMPLOYED IN FOLLOW-UP OF CATEGORY IV EM

| MOS Group | MOS Codes Included | Component: AFQT Range: | Cases on ACB & Background RA 21-30 | Cases on ACB & Background RA 31-50 | Cases on ACB & Background US 10-50 | Cases on Experimental Tests RA 21-30 | Cases on Experimental Tests RA 31-50 | Cases on Experimental Tests US 10-50 |
|---|---|---|---|---|---|---|---|---|
| Airborne Infantry | 111.07,111.17,112.07,112.17 | | 38 | 41 | 0 | 38 | 41 | 0 |
| Infantry | 111.00,111.10,112.00,112.10 | | 178 | 87 | 77 | 178 | 87 | 75 |
| Armor | 131.0, 131.1 | | 56 | 28 | 24 | 55 | 26 | 24 |
| Field Artillery | 141.0, 141.1, 142.0, 142.1 | | 68 | 37 | 41 | 68 | 37 | 41 |
| Engineer, Air Defense | 120.0[a], 171.0, 171.1, 191.0 191.1, 192.0, 192.1 | | 57 | 20 | 25 | 57 | 20 | 25 |
| Total Combat | | | 397 | 213 | 167 | 396 | 211 | 165 |
| Field Communi-cations | 310.0 | | 45 | 15 | 27 | 37 | 14 | 18 |
| Military Crafts | 510.0, 530.0, 540.0, 550.0 | | 63 | 30 | 38 | 33 | 20 | 16 |
| Automotive Maintenance | 630.0, 631.1 | | 29 | 21 | 0 | 22 | 17 | 0 |
| Motor Transport | 640.0, 642.1 | | 54 | 32 | 0 | 29 | 18 | 0 |
| Clerical | 710.0, 711.1, 760.0, 768.1 | | 29 | 15 | 0 | 18 | 11 | 0 |
| Medical | 910.0, 911.1 | | 34 | 17 | 60 | 20 | 11 | 43 |
| Military Police | 951.0, 951.1 | | 16 | 10 | 20 | 0 | 0 | 8 |
| Total Technical | | | 270 | 140 | 145 | 159 | 91 | 85 |
| Grand Total | | | 667 | 353 | 312 | 555 | 320 | 250 |

[a] Cases in 120.0: RA 21-30 23; RA 31-50 13; US 10-50 12.

## RESULTS

### Job Performance of Lower Mental Category men

Of RA Category IV men in combat MOS, 50% attained an acceptable level of performance and 43% met standards of performance for career level (Table 2). Percentages for the RA lower Category III men were virtually the same. More inductees (US), however, despite the fact that their AFQT scores ranged as low as the 10th percentile, were rated acceptable (63%) and of career level (56%).

In technical MOS, the RA Category IV men were lowest, the RA lower Category III substantially higher, and the US enlisted men decisively higher than either. RA Category IV men performed better in combat than in technical MOS--50% vs 45%, acceptable; 43% vs 40%, career level. On the other hand, RA low Category III men performed better in technical MOS--56% vs 51%, acceptable and 50% vs 43%, career. Similarly, US men performed better in technical MOS--74% vs 63%, acceptable; 70% vs 50%, career. The differences noted were all statistically significant beyond the .05 level. When the percentages were broken down by aptitude area groupings as in Table 2, the superiority of the US samples over the RA samples combined was found to be significant for every area except the Electronic Aptitude Area in which samples were small. Owing to small size of individual samples, the superiority of RA III to RA IV was not statistically significant for single MOS groups, although the difference held for all technical MOS combined. Note that all MOS analyzed were relatively low level skills, requiring only eight weeks of advanced individual training.

To determine whether aptitude area differences could account for the superiority of RA lower III men over RA IV in the technical samples, and for the overall superiority of US men over RA, MOS samples were compared on the basis of relevant aptitude area scores. Current aptitude area[1/] scores were compared, rather than those in use at the time of data collection (Table 3).

The results demonstrated that the overall superiority of US samples cannot be attributed to higher aptitude area scores. Further, although the RA low Category III means were higher than those for RA Category IV men in all aptitude area samples, performance ratings were not correspondingly higher in MOS samples selected on IN and AE. The Category III men did have higher performance ratings in all other aptitude area groups. The EL samples showed little difference in means on predictors and performance ratings. The evidence suggests that, within the restricted AFQT categories,

---

[1/] The Classification Inventory and the General Information Test were administered after 1 to 1 1/2 years' Army experience. Thus the absolute level of the aptitude area scores to which they contribute (IN and AE) may not represent level on entry into service. While GIT scores were undoubtedly higher than they would have been at entry, comparison of mean scores between samples is not thereby invalidated.

Table 2

PERCENT OF LOWER MENTAL CATEGORY EM MEETING STANDARDS
FOR ACCEPTABLE AND CAREER LEVEL IN JOB PERFORMANCE RATING

| Aptitude Area | MOS Groups Represented | Percent Acceptable | | | Percent Career Level | | |
|---|---|---|---|---|---|---|---|
| | | RA 21-30 | RA 31-50 | US 10-50 | RA 21-30 | RA 31-50 | US 10-50 |
| IN | Infantry, Airborne | 50 | 52 | 60 | 43 | 43 | 55 |
| AE | Engr, Armor, Field Arty, Air Defense | 49 | 49 | 65 | 42 | 43 | 57 |
| EL | Field Communications | 44 | 37 | 54 | 39 | 31 | 49 |
| GM | Military Crafts | 43 | 64 | 78 | 39 | 55 | 75 |
| MM | Automotive Maintenance, Transport | 44 | 51 | - | 39 | 46 | - |
| CL | Administration, Supply | 48 | 68 | - | 43 | 63 | - |
| GT | Medical Care, Military Police | 49 | 62 | 78 | 44 | 55 | 74 |
| | Combat | 50 | 51 | 63 | 43 | 43 | 56 |
| | Technical | 45 | 56 | 74 | 40 | 50 | 70 |

Table 3

MEAN SCORES ON APTITUDE AREA SELECTORS FOR LOWER MENTAL CATEGORY SAMPLES

| Aptitude Area | MOS Groups Represented | Mean Aptitude Area Scores | | |
|---|---|---|---|---|
| | | RA 21-30 | RA 31-50 | US 10-50 |
| IN | Infantry, Airborne | 94.68 | 101.83 | 96.81 |
| AE | Engr, Armor, Field Arty, Air Def | 105.13 | 108.95 | 109.65 |
| EL | Field Communications | 94.47 | 95.33 | 97.62 |
| GM | Military Crafts | 92.42 | 96.79 | 92.71 |
| MM | Automotive Maintenance, Transport | 95.73 | 103.61 | ----- |
| CL | Administration, Supply | 96.98 | 100.00 | ----- |
| GT | Medical Care, Military Police | 92.71 | 98.09 | 90.21 |

aptitude area scores have some minor effects on job performance in technical MOS though not in combat MOS. But the effect of other variables--possibly motivational in nature--has far more effect on job performance differences than do the aptitude area differences.

The absolute level of the aptitude area means for technical RA IV samples, however, does indicate that the job performance levels may depend on a minimum ability in the area even though a higher level does not assure a higher performance. If no supplementary screening and classification on aptitude area scores had been applied, the mean aptitude area score for upper Category IV men would have been 90.6; for lower Category III men, 96.4; for Category IV and Category III men, 92.2.

## COMPARISON OF ASSIGNED RA CATEGORY IV MEN WITH EARLY DISCHARGE MEN

As noted above, 137 of the RA Category IV men in the follow-up sample were found to have been discharged early in their first term of service for failure to adjust to the requirements of Army life. Table 4 presents a comparison of these early discharge men with RA Category IV men in combat and technical MOS with respect to age, education, and test scores. Means for combat and Technical MOS were averaged across MOS. Within the combat MOS few significant differences appeared (Table 5). In Army technical MOS more such differences appeared, as might be expected (Table 6). These differences were of the order of 5 to 10 Army standard score points (sample mean difference from grand mean). However, the disparities were not numerous nor large enough to preclude averaging across all technical samples in order to compare with the discharged group.

The early discharge group proved to be younger, with less formal education, and higher on AFQT score. This last difference, although statistically significant because of the highly restricted range, was less than a single percentile. The age and education differences reflect findings in Air Force studies (Gordon and Flyer, 1962; Flyer, 1959), as well as other Army studies (Klieger et al, 1961; Dubuisson, 1963).

The only other statistically significant differences were on Arithmetic Reasoning and Electronics Information tests, in which the technical sample was significantly higher than the combat and early discharge samples. No significant difference on ACB tests was found between the combat and early discharge samples.

### Prediction of Job Performance Criterion

Operational and background selectors. Given the foregoing evidence that a number of combat and technical MOS are suitable for RA Category IV men under current screening and classification procedures, the next question was what instruments might be used to improve these procedures, and what is the extent of validity that may be anticipated from such improvements? First, the background variables of age and education, and ACB test administered operationally during initial classification were considered.

Table 4

MEAN SCORES ON SELECTOR VARIABLES FOR RA CATEGORY IV EARLY DISCHARGEES COMPARED WITH COMBAT AND TECHNICAL SAMPLES

| | Early Discharge N = 137 | | Combat MOS N = 397 | | Technical MOS N = 270 | | Total |
|---|---|---|---|---|---|---|---|
| Variables | Mean | S. D. | Mean | S. D. | Mean | S. D. | Mean |
| Age | 18.87* | 1.30 | 19.35 | 2.78 | 19.45 | 1.73 | 19.30 |
| Education | 9.75** | 1.66 | 10.38 | 1.59 | 10.43 | 1.67 | 10.29 |
| AFQT | 26.31** | 3.87 | 25.34 | 3.18 | 25.45 | 2.70 | 25.54 |
| VE | 90.31 | 16.07 | 87.38 | 14.80 | 87.93 | 14.22 | 88.06 |
| AR | 86.64 | 13.49 | 87.30 | 13.93 | 89.75* | 14.46 | 88.01 |
| PA | 95.58 | 17.95 | 94.81 | 17.53 | 95.74 | 16.49 | 95.08 |
| MA | 94.93 | 11.55 | 95.34 | 12.10 | 94.43 | 12.35 | 94.96 |
| ACS | 100.75 | 13.99 | 99.12 | 15.42 | 99.88 | 14.46 | 99.65 |
| ARC | 89.30 | 12.38 | 88.23 | 11.03 | 88.43 | 10.23 | 88.48 |
| SM | 91.46 | 12.50 | 93.96 | 11.82 | 93.30 | 11.44 | 93.31 |
| AI | 90.03 | 12.75 | 90.42 | 13.18 | 90.87 | 12.28 | 90.50 |
| ELI | 88.44 | 15.53 | 89.73 | 17.28 | 93.00* | 16.04 | 90.73 |

*Significant difference at 5% level.
**Significant difference at 1% level.

Table 5

MEAN SCORES ON SELECTOR VARIABLES FOR RA CATEGORY IV COMBAT SAMPLES

| Variables | Airborne | Infantry | Armor | Artillery | Engr, Air Def. | All Combat |
|---|---|---|---|---|---|---|
| Age | 19.43 | 19.28 | 19.37 | 19.08 | 19.57 | 19.35 |
| Education | 10.71 | 10.25 | 10.32 | 10.37 | 10.23 | 10.38 |
| AFQT | 24.89 | 25.20 | 25.84 | 24.85 | 26.19 | 25.34 |
| VE | 88.34 | 87.27 | 88.30 | 82.23* | 90.74 | 87.38 |
| AR | 86.34 | 87.66 | 88.30 | 86.62 | 87.60 | 87.30 |
| PA | 94.03 | 95.75 | 93.25 | 93.65 | 97.65 | 94.81 |
| MA | 97.89 | 93.59 | 94.61 | 94.21 | 96.39 | 95.34 |
| ACS | 101.39 | 98.35 | 96.57 | 100.09 | 99.19 | 99.12 |
| ARC | 89.47 | 87.35 | 87.25 | 88.91 | 88.16 | 88.23 |
| SM | 95.92 | 93.02 | 93.48 | 94.00 | 93.37 | 93.96 |
| AI | 90.34 | 89.15 | 92.50 | 90.46 | 89.65 | 90.42 |
| ELI | 91.79 | 87.34 | 88.62 | 88.13 | 92.75 | 89.73 |
| AA 90+ | 5.16 | 5.63** | 4.66 | 4.53 | 5.02 | 5.00 |

*Significant difference at 5% level.

**Significant difference at 1% level.

Table 6

MEAN SCORES ON SELECTOR VARIABLES FOR RA CATEGORY IV TECHNICAL SAMPLES

| Variables | Field Comm. | Auto. Crafts | Motor Maint. | Trans. | Clerical | Medical | Mil. Police | All Technical |
|---|---|---|---|---|---|---|---|---|
| Age | 19.11 | 19.47 | 19.08 | 19.54 | 19.14 | 19.74 | 20.05 | 19.45 |
| Education | 10.31 | 10.33 | 9.86 | 9.96 | 11.28* | 10.65 | 10.62 | 10.43 |
| AFQT | 25.78 | 25.32 | 25.52 | 25.30 | 25.31 | 25.56 | 25.50 | 25.45 |
| VE | 88.16 | 84.36 | 83.72 | 84.28 | 89.24 | 94.74** | 91.00 | 87.93 |
| AR | 90.00 | 86.10 | 83.03 | 83.68 | 97.93** | 88.56 | 98.94** | 89.75 |
| PA | 96.73 | 96.41 | 95.76 | 92.18 | 99.93 | 94.88 | 94.31 | 95.74 |
| MA | 96.96 | 91.44 | 94.38 | 97.33 | 93.07 | 96.00 | 91.81 | 94.43 |
| ACS | 100.27 | 98.03* | 94.31 | 96.54 | 104.72* | 100.88 | 104.38 | 99.88 |
| ARC | 93.84** | 87.19 | 86.66 | 87.32 | 87.79 | 91.15 | 85.06 | 88.43 |
| SM | 92.38 | 90.43 | 95.59 | 93.54 | 92.38 | 94.32 | 94.44 | 93.30 |
| AI | 88.62 | 88.92 | 97.79** | 94.20 | 88.76 | 90.35 | 87.94 | 90.87 |
| ELI | 93.22 | 90.97 | 99.14 | 92.13 | 92.69 | 94.03 | 88.81 | 93.00 |
| AA 90+ | 5.38 | 4.10** | 4.69 | 4.50 | 5.07 | 5.47** | 5.12 | 4.90 |

*Significant difference at 5% level.

**Significant difference at 1% level.

Significant differences in validity in different samples were found in the case of only six variables, one of which was number of aptitude areas above 90. Table A-1 of the Appendix shows the variables which predicted job performance differentially in MOS and AFQT categories. In view of the small number of significant differences, validity coefficients for the background variables and classification test variables (including total score on the Classification Inventory and General Information Test administered at the time the criterion ratings were obtained) were averaged first across MOS, and finally, across jobs (Table 7). From the values presented, it is evident that for EM scoring below average on AFQT, further screening on the basis of age, education, and cognitive ACB tests would result in but slight gain in prediction of the job performance criterion.

Experimental noncognitive predictors. Table 8 shows the average validity coefficients of each experimental scale for combat and technical jobs, first by AFQT category and then for all categories combined. No consistent trend appeared from the analysis of differences among combat samples (See Table A-2 of Appendix). Among the technical samples however, the higher validity coefficients appeared in the less selected, lower skill MOS, particularly Military Crafts. Apparently, the adjustment and adaptability aspects of the man relate more to good performance in the lower skill MOS than in the more selected MOS. Note that the empirical scales derived in RA Category IV technical samples generalized well to other technical samples but not to combat samples. In sum, certain of the empirical noncognitive scales of the Self-Description Inventory (Combat 2, Technical, Adjustment 2) showed some promise of contributing to differential selection of RA Category IV men for technical jobs, very little promise for combat jobs.

### Prediction of Military Adjustment Criterion

Operational and background selectors. For the military adjustment criterion, in contrast to the job criterion, background and ACB test variables yielded significant differences in validity in ten cases (Table A-3 of Appendix). Age, the Mechanical Aptitude Test, and the General Information Test (total score) were consistently more valid for Field Artillery MOS than for other combat MOS. There was no clearly consistent pattern of differences among technical jobs. When the validity coefficients were averaged across MOS and AFQT qualification category (Table 9), only one measure--total score on the Classification Inventory--had appreciable validity in three samples--enlisted men of AFQT percentile 31-50 in combat jobs, RA enlisted men of AFQT 21-30, and US enlisted men of AFQT 10-30. For supplementary screening in relation to the adjustment criterion, these measures appear to hold little promise.

Experimental noncognitive measures. Significant differences in validity for the military adjustment criterion were found in 12 instances (Table A-4 of the Appendix). These scales appeared more valid for the RA Category IV samples than for other categories, and for Field Artillery than for other combat MOS.

Table 7

VALIDITY COEFFICIENTS FOR AGE, EDUCATION, AND ACB TESTS FOR PREDICTION OF JOB PERFORMANCE RATINGS[a]

| | | Combat Jobs | | | Technical Jobs | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Variable | Component AFQT Range | RA 21-30 | RA 31-50 | US 10-50 | RA 21-30 | RA 31-50 | US 10-50 | All Combat | All Technical | All Jobs |
| Age | | 05 | 09 | 19 | 16 | 18 | 02 | 09 | 12 | 10 |
| Education | | 11 | 00 | 01 | 03 | 13 | 05 | 06 | 06 | 06 |
| Verbal (VE) | | -06 | -04 | 03 | -06 | 01 | 04 | -04 | -02 | -03 |
| Arithmetic Reasoning (AR) | | 06 | 19 | 02 | -01 | 04 | 17 | 09 | 05 | 07 |
| Pattern Analysis (PA) | | 10 | 12 | 09 | 07 | -11 | 08 | 11 | 03 | 07 |
| Mechanical Aptitude (MA) | | -02 | 19 | 12 | 13 | 12 | 04 | 06 | 10 | 08 |
| Army Clerical Speed (ACS) | | 07 | 11 | 10 | 01 | 16 | 14 | 09 | 08 | 09 |
| Army Radio Code (ARC) | | -03 | 10 | 06 | -07 | 04 | -02 | 02 | -03 | 00 |
| Shop Mechanics (SM) | | 03 | 11 | 14 | 15 | 02 | 22 | 08 | 14 | 10 |
| Automotive Information (AI) | | 10 | 18 | 20 | 19 | 09 | 15 | 15 | 15 | 15 |
| Electronics Information (ELI) | | -01 | 08 | -05 | 02 | 01 | 06 | 01 | 03 | 02 |
| Classification Inventory (CI)[b] | | 16 | 18 | 10 | 17 | 08 | 28 | 15 | 18 | 16 |
| General Information Test (GIT)[b] | | 08 | 17 | 15 | 03 | 04 | 11 | 12 | 05 | 10 |
| No. of Aptitude Area Scores 90 or above | | 06 | 12 | 07 | 11 | 02 | 19 | 08 | 11 | 09 |

[a] Decimal points omitted.

[b] Administered concurrently with ratings.

Table 8

VALIDITY OF SCALES ON NONCOGNITIVE MEASURES FOR PREDICTION OF JOB PERFORMANCE RATINGS[a]

| Variable | Component AFQT Range | Combat Jobs RA 21-30 | Combat Jobs RA 31-50 | Combat Jobs US 10-50 | Technical Jobs RA 21-30 | Technical Jobs RA 31-50 | Technical Jobs US 10-50 | All Combat | All Technical | All Jobs |
|---|---|---|---|---|---|---|---|---|---|---|
| **Empirical Scales of the Classification Inventory** | | | | | | | | | | |
| Combat Scale 1[b] | | (33)[e] | 17 | 12 | 25 | 17 | 09 | 15[f] | 19 | 17[f] |
| Combat Scale 2[b] | | (30)[e] | 16 | 00 | 11 | 20 | 08 | 09[f] | 12[f] | 11[f] |
| Technical Scale[c] | | 09 | 16 | 19 | (48)[e] | 22 | 19 | 13 | 21[f] | 14[f] |
| Adjustment Scale (Combat)[d] | | 14 | 12 | 09 | 16 | -10 | 09 | 12 | 07 | 11 |
| Adjustment Scale (Technical)[c] | | 11 | 11 | 11 | 30 | 04 | 14 | 11 | 19 | 13 |
| **General Information Test** | | | | | | | | | | |
| Knowledge of Military | | 01 | 16 | 09 | 10 | -06 | 22 | 07 | 09 | 07 |
| Knowledge of Tools, Mech. Equip. | | 09 | 22 | 15 | 06 | 11 | 12 | 14 | 09 | 12 |
| Knowledge of Firearms, Hunting, Fishing | | 06 | 05 | 17 | 05 | 01 | 10 | 08 | 05 | 07 |
| Knowledge of Team Sports | | 06 | 01 | 09 | -11 | -01 | -07 | 05 | -07 | 01 |
| **Self-Description Inventory** | | | | | | | | | | |
| Annoyance | | -05 | 08 | -08 | 06 | -07 | -04 | -02 | 00 | -02 |
| Mechanical Experience | | 09 | 12 | 03 | 08 | 02 | 10 | 09 | 07 | 08 |
| General Adjustment | | 16 | 08 | 06 | 16 | 24 | 33 | 11 | 23 | 15 |
| Family Relations | | 07 | 10 | -01 | 10 | 19 | 18 | 06 | 15 | 09 |
| Rural-Urban | | 14 | 15 | 18 | 04 | 18 | 16 | 15 | 11 | 14 |
| Socio-Economic | | 03 | 12 | -05 | -01 | -07 | 00 | 04 | -02 | 02 |
| Job Adaptability | | 21 | 02 | 05 | 07 | 04 | 20 | 12 | 09 | 11 |
| **Empirical Scales of the SDI** | | | | | | | | | | |
| Combat Scale 1[b] | | (37)[e] | 13 | 23 | 08 | 19 | 15 | 18[f] | 13 | 15[f] |
| Combat Scale 2[b] | | (31)[e] | 12 | 16 | 15 | 20 | 35 | 14[f] | 22[f] | 18[f] |
| Technical Scale[c] | | 12 | 11 | 11 | (52)[e] | 33 | 29 | 11 | 31[f] | 15[f] |
| Adjustment Scale (Combat)[d] | | 28 | 26 | 12 | 16 | 29 | 12 | 24 | 19 | 22 |
| Adjustment Scale (Technical)[c] | | 17 | 08 | 02 | 21 | 26 | 29 | 11 | 25 | 15 |

[a]Decimal points omitted.

[b]Derived by item analysis on random half of sample of Category IV RA EM in combat jobs, N 174.

[c]Derived by item analysis on sample of Category IV RA EM in technical jobs, N 159.

[d]Derived by item analysis on sample of Category IV RA EM in combat jobs, N 348.

[e]Biased coefficient.

[f]Average of unbiased coefficients only.

Table 9

VALIDITY OF AGE, EDUCATION, AND ACB TESTS FOR PREDICTION OF MILITARY ADJUSTMENT RECORD[a]

| Variables | Component AFQT Range | Combat Jobs RA 21-30 | Combat Jobs RA 31-50 | Combat Jobs US 10-50 | Technical Jobs RA 21-30 | Technical Jobs RA 31-50 | Technical Jobs US 10-50 | All Combat | All Technical | All Jobs |
|---|---|---|---|---|---|---|---|---|---|---|
| Age | | 13 | 06 | 16 | 19 | 09 | -13 | 12 | 08 | 10 |
| Education | | 14 | 14 | -05 | 07 | 00 | 03 | 10 | 04 | 08 |
| Verbal (VE) | | -05 | -12 | -05 | -04 | -08 | 07 | -07 | -02 | -05 |
| Arithmetic Reasoning (AR) | | 01 | 04 | -03 | 11 | -05 | 03 | 01 | 05 | 03 |
| Pattern Analysis (PA) | | -04 | 05 | 02 | 08 | -06 | 02 | 00 | 03 | 01 |
| Mechanical Aptitude (MA) | | -02 | 02 | 19 | 05 | 08 | 11 | 04 | 07 | 05 |
| Army Clerical Speed (ACS) | | 04 | 06 | 08 | 02 | -07 | 09 | 07 | 02 | 05 |
| Army Radio Code (ARC) | | 07 | 04 | 03 | -01 | -06 | -08 | 05 | -04 | 01 |
| Shop Mechanics (SM) | | 04 | 02 | 09 | 07 | 04 | 12 | 05 | 08 | 06 |
| Automotive Information (AI) | | -06 | -05 | 23 | 06 | 15 | 17 | 00 | 11 | 05 |
| Electronics Information (ELI) | | 01 | 01 | 02 | -03 | 04 | 09 | 01 | 02 | 02 |
| Classification Inventory (CI)[b] | | 00 | 24 | -02 | 24 | 06 | 35 | 06 | 22 | 12 |
| General Information Test (GIT)[b] | | 02 | 05 | 11 | 05 | -09 | 02 | 05 | 01 | 04 |
| No. of Aptitude Area Scores 90 or above | | 04 | 10 | 07 | 12 | 02 | 10 | 06 | 09 | 07 |

[a]Decimal points omitted.

[b]Administered after 12 months in service.

Table 10 indicates that the noncognitive measures have considerable promise of validity for military adjustment in technical jobs, particularly among RA Category IV men. Across all technical MOS samples, the empirical scales--Combat 2, Technical, Adjustment (Combat), and Adjustment (Technical)--had average unbiased validity coefficients of .26 or .27. Unbiased estimates for the item analysis samples on which these scales are based would not be less than this, although not so high as the back validity coefficients of .39 and .48 for the latter two scales. The two adjustment scales yielded unbiased validity coefficients of .18 and .13 across combat samples--a modest validity, but among the highest of any variables for this criterion.

Moreover, referring back to Table 8 the Adjustment Scale (Combat) of the Self-Description Inventory had the highest validity for job performance across combat samples (.24) and across all samples (.22). Taken with the parallel finding in Table 10, validity of .18 for adjustment in combat jobs and .22 for adjustment across all jobs, the results indicate considerable promise for a single scale to be used to screen not only Category IV but lower Category III men as well.

## IMPLICATIONS OF RESULTS

The manpower resources represented by Category IV men can be utilized to some advantage by the Army during emergencies. Certain considerations regarding the selection and assignment of men in this category stem from the findings in this report.

Substantial percentages of Category IV men assigned to lower skill combat (50%) and technical (45%) jobs achieved acceptable levels of performance. This finding suggests that in assigning these men, consideration should be limited almost exclusively to jobs requiring relatively low skill levels. Since a portion of the personnel spaces in these MOS suitable for Category IV men need to be used for men who progress rapidly to advanced level MOS, the potential utilization of below-average men is less than the number of spaces in these MOS. The finding that the men studied had been assigned to a considerable extent in the areas of their higher abilities further suggests that, if an acceptable level of job performance is to be maintained, men in this category should insofar as possible, be assigned according to their best aptitude area.

With respect to screening devices which might assure that a higher proportion of Category IV acceptees would be capable of adequate performance, no further screening on cognitive measures beyond AFQT and the two aptitude areas of 90 required appeared worthwhile[2/]. However, for higher skill technical MOS, the importance of differential classification on the basis of cognitive ACB measures was underlined. For lower skill MOS, noncognitive measures, both operational and experimental, were more effective predictors of performance.

---

[2/] A minimum GT score of 80 has been added to the screening prerequisites since this study was made.

Table 10

VALIDITY OF SCALES ON NONCOGNITIVE MEASURES FOR PREDICTION OF MILITARY ADJUSTMENT RECORD[a]

| | Combat Jobs | | | Technical Jobs | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Variable / Component / AFQT Range | RA 21-30 | RA 31-50 | US 10-50 | RA 21-30 | RA 31-50 | US 10-50 | All Combat | All Technical | All Jobs |
| **Empirical Scales of the Classification Inventory** | | | | | | | | | |
| Combat Scale 1[b] | 14 | 06 | 08 | 36 | 10 | 00 | 10 | 20 | 13 |
| Combat Scale 2[b] | 12 | 12 | 18 | 20 | 26 | 10 | 13 | 19 | 15 |
| Technical Scale[c] | 07 | 12 | 06 | 42 | -09 | 20 | 08[f] | 27 | 14[f] |
| Adjustment Scale (Combat)[d] | (37)[e] | -02 | 04 | 27 | 10 | -04 | 01 | 15[f] | 07[f] |
| Adjustment Scale (Technical)[c] | 13 | 20 | 09 | (49)[e] | 11 | 36 | 14 | 24[f] | 16[f] |
| **General Information Test** | | | | | | | | | |
| Knowledge of Military | 02 | -07 | 06 | 10 | -21 | 09 | 01 | 01 | 01 |
| Knowledge of Tools, Mech. Equip. | 05 | 12 | 16 | 06 | 09 | 13 | 09 | 08 | 09 |
| Knowledge of Firearms, Hunting, Fishing | 05 | 07 | 07 | 06 | 00 | 00 | 06 | 03 | 05 |
| Knowledge of Team Sports | -02 | 07 | 03 | 00 | -03 | -09 | 01 | -03 | 00 |
| **Self-Description Inventory** | | | | | | | | | |
| Annoyance | -01 | -02 | -08 | -10 | -20 | -07 | -02 | -12 | -05 |
| Mechanical Experience | 01 | 01 | 03 | 02 | -09 | 19 | 01 | 03 | 02 |
| General Adjustment | 06 | 13 | 09 | 25 | 13 | 20 | 09 | 20 | 13 |
| Family Relations | 04 | 08 | 05 | 28 | 22 | 05 | 05 | 21 | 10 |
| Rural-Urban | 07 | 14 | 13 | 08 | 32 | 08 | 10 | 15 | 12 |
| Socio-Economic | 06 | 05 | 12 | -02 | 09 | 00 | 07 | 02 | 06 |
| Job Adaptability | 05 | 12 | 03 | 23 | 09 | 26 | 07 | 20 | 11 |
| **Empirical Scales of the SDI** | | | | | | | | | |
| Combat Scale 1[b] | 18 | 08 | 23 | 23 | 24 | 14 | 17 | 21 | 18 |
| Combat Scale 2[b] | 13 | 10 | 12 | 24 | 19 | 35 | 12 | 26 | 16 |
| Technical Scale[c] | 09 | 07 | 11 | 29 | 24 | 23 | 09[f] | 26 | 15[f] |
| Adjustment Scale (Combat)[d] | (39)[e] | 17 | 19 | 31 | 35 | 12 | 18[f] | 27[f] | 22[f] |
| Adjustment Scale (Technical)[c] | 09 | 16 | 17 | (48)[e] | 33 | 19 | 13 | 26[f] | 15[f] |

[a]Decimal points omitted.

[b]Derived by item analysis on random half of sample of Category IV RA EM in combat jobs, N 174.

[c]Derived by item analysis of sample of Category IV RA EM in technical jobs, N 159

[d]Derived by item analysis on sample of Category IV RA EM in combat jobs, N 348.

[e]Biased coefficient.

[f]Average of unbiased coefficients only.

The major findings was that for additional screening across all technical jobs, and to a lesser extent combat jobs, empirical scales from the experimental Self-Description Inventory were promising predictors of both job performance and military adjustment record. On the basis of these findings and other studies to predict military adjustment (Dubuisson, 1963), a composite personality-type questionnaire could be assembled and validated on new samples, then standardized as a supplementary operational screening device to improve the quality of lower mental category men accepted for enlistment or induction into the Army.

The finding that RA Category IV enlisted men who received an early discharge were younger and has less formal education than those retained suggests that special screening standards might be set for 17- and 18-year olds with limited education.

# REFERENCES


### Publications of the U. S. Army Personnel Research Office, OCRD, DA

Dubuisson, A. U. Longitudinal validation of predictors designed to measure unacceptable performance in the Army. Technical Research Note. (in press)..

Gaylord, R. H., Stunkel, Eva R., and Campbell, J. T. Preparation of the criterion for the combat validation study. Research Memorandum 51-28. March 1951.

Karcher, E. K. Jr., Willemin, L. P., Burke, Laverne K., and Sprunger, J. A. Development of combat aptitude ratings for combat arms. Research Memorandum 55-18. July 1955.

Klieger, W. A., Dubuisson, A. U., and deJung, J. E. Prediction of unacceptable performance in the Army. Technical Research Note 113. June 1961.

Uhlaner, J. E., Fuchs, E. F., Weinert, Arla, and Zeidner, J. Development of forms and procedures for reporting school and job performance. Research Memorandum 51-25. June 1951.

### Additional References

Edwards, A. L. Experimental design in psychological research. New York: Rinehart and Co. 1950.

Flyer, E. S. Factors relating to discharge for unsuitability among 1956 airman accessions to the Air Force. Personnel Laboratory, Wright Air Development Division, Lackland Air Force Base, Texas. December 1959. (WADC-TN-59-201).

Gordon, Mary A. and Flyer, E. S. Predicted success of low-aptitude airman. 6570th Personnel Research Laboratory, Aerospace Medical Division, Air Force Systems Command, Lackland Air Force Base, Texas. August 1962. (PRL-TDR-62-14).

# APPENDIX


| | | Page |
|---|---|---|
| Table A-1. | Variables predicting job performance differentially in MOS and AFQT categories | 25 |
| A-2. | Experimental scales predicting job performance differentially | 26 |
| A-3. | Variables predicting military adjustment differentially | 27 |
| A-4. | Experimental scales predicting military adjustment differentially | 28 |

Table A-1

VARIABLES PREDICTING JOB PERFORMANCE DIFFERENTIALLY IN MOS AND AFQT CATEGORIES

| Variable | MOS Group | Sample with Higher Validity | r | Other Samples | r |
|---|---|---|---|---|---|
| MA | Combat | RA 31-50 | .19 | RA 21-30 | -.02 |
| | | US 10-50 | .12 | | |
| Age | Combat | Engineer, Air Defense | .36 | Other Combat MOS | .05 |
| MA | Technical (RA) | Clerical | .47 | Field Communications | -.18 |
| | | Auto Maintenance | .29 | Other Technical MOS | .11 |
| SM | Technical (RA) | Military Crafts | .32 | Field Communications | -.09 |
| | | Auto Maintenance | .31 | Other Technical MOS | -.01 |
| AA 90+ | Technical (RA) | Auto Maintenance | .37 | Motor Transport | -.19 |
| | | Clerical | .32 | Field Communications | -.12 |
| | | | | Other Technical MOS | .15 |
| GIT | Technical (RA) | Military Crafts | .40 | Clerical | -.27 |
| | | | | Other Technical MOS | -.03 |

Table A-2

EXPERIMENTAL SCALES PREDICTING JOB PERFORMANCE DIFFERENTIALLY

IN MOS AND AFQT CATEGORIES

| Variable | MOS Group | Samples with Higher Validity | r | Other Samples | r |
|---|---|---|---|---|---|
| S.D. Inventory, EC-4 | | | | | |
| Job Adapt. | Combat | RA 21-30 | .21 | RA-31-50 | .02 |
| | | | | US 10-50 | .05 |
| Annoyance | Combat (RA) | Armor | .21 | Engineer Air, Defense | -.25 |
| | | | | Other Combat MOS | -.01 |
| Rural-Urban | Combat | Field Artillery | .34 | Other Combat MOS | .11 |
| Adjustment (Combat) | Technical (RA) | Military Crafts | .41 | Other Technical MOS | .1[illegible] |
| Adjustment (Tech) | Technical (RA) | Military Crafts | .4[illegible] | Other Technical MOS | .17. |
| GIT | | | | | |
| Military Knowledge | Technical (RA) | Military Crafts | .30 | Field Communications | -.29 |
| | | Motor Transport | .23 | Other Technical MOS | -.02 |
| Knowledge of Hunting, Firearms, Fishing | Technical (RA) | Military Crafts | .39 | Clerical | -.20 |
| | | | | Field Communications | -.14 |
| | | | | Other Technical MOS | .03 |

BETWEEN COMBAT AND TECHNICAL JOBS

| Variable | Validity Coefficients | |
|---|---|---|
| | Technical | Combat |
| S. D. Inventory, EC-4 | | |
| Technical Scale | .31 | .11 |
| Adjustment (Tech) | .25 | .11 |

Table A-3

VARIABLES PREDICTING MILITARY ADJUSTMENT DIFFERENTIALLY

IN MOS AND AFQT CATEGORIES

| Variable | MOS Group | Samples with Higher Validity | r | Other Samples | r |
|---|---|---|---|---|---|
| Age | Combat | Field Artillery | .29 | Other Combat MOS | .08 |
| | Technical | RA 21-30 | .19 | RA 31-50 | .09 |
| | | | | US 10-50 | -.13 |
| | Technical | Medical | .45 | Other Technical MOS | .05 |
| MA | Combat | Field Artillery | .25 | Other Combat MOS | -.01 |
| ACS | Technical | Field Communications | .27 | Military Crafts | -.13 |
| | | | | Other Technical MOS | .01 |
| AI | Combat | US 10-50 | .23 | RA 21-30 | -.06 |
| | | | | RA 31-50 | -.05 |
| CI | Combat | RA 31-50 | .24 | RA 21-30 | .00 |
| | | | | US 10-50 | -.02 |
| GIT | Combat | Field Artillery | .24 | Engineer, Air Defense | -.18 |
| | | | | Armor | -.18 |
| | | | | Other Combat MOS | .09 |
| | Technical | Auto Maintenance | .35 | Medical | -.54 |
| | | Military Crafts | .17 | Clerical | -.32 |
| | | | | Other Technical MOS | .02 |

BETWEEN COMBAT AND TECHNICAL JOBS

| Variable | Validity Coefficients | |
|---|---|---|
| | Technical | Combat |
| CI | .22 | .06 |

Table A-4

EXPERIMENTAL SCALES PREDICTING MILITARY ADJUSTMENT DIFFERENTIALLY

IN MOS AND AFQT CATEGORIES

| Variable | MOS Group | Samples Higher Validity | r | Other Samples | r |
|---|---|---|---|---|---|
| **CI** | | | | | |
| Combat, 1 | Technical | RA 21-30 | .36 | RA 31-50 | .10 |
| | | | | US 10-50 | .00 |
| Technical | Technical | RA 21-30 | .42 | RA 31-50 | .10 |
| | | | | US 10-50 | .20 |
| **GIT** | | | | | |
| Military Knowledge | Combat | Field Artillery | .14 | Armor | -.36 |
| | | Airborne | .13 | | |
| | Technical | RA 21-30 | .10 | RA 31-50 | -. |
| | | US 10-50 | .09 | | |
| | Technical | Other Technical MOS | -.01 | Clerical | -.50 |
| | | | | Medical | -.20 |
| Tools | Combat | Field Artillery | .29 | Other Combat MOS | .04 |
| Sports | Combat | Field Artillery | .30 | Other Combat MOS | -.04 |

BETWEEN COMBAT AND TECHNICAL JOBS

| Variable | Validity Coefficients: Technical | Combat |
|---|---|---|
| CI | | |
| Technical | .27 | .08 |
| S.D. Inventory, EC-4 | | |
| Family Relations | .21 | .05 |
| Job Adapt | .20 | .07 |
| Combat, 2 | .26 | .12 |
| Technical | .26 | .09 |



C48894